EXHIBIT D

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY
DOCKET NO. 07-CV-359

(Corrected version)

CHAYA GROSSBAUM and MENCHEM GROSSBAUM, her spouse, individually, as guardians ad litem of the infant, ROSIE GROSSBAUM,

Plaintiffs,

v.

GENESIS GENETICS INSTITUTE, L.L.C., of the State of Michigan, MARK R. HUGHES, M.D., NEW YORK UNIVERSITY SCHOOL OF MEDICINE and NEW YORK UNIVERSITY HOSPITALS CENTER, both corporations in the State of New York, ABC CORPORATIONS 1-10 and JOHN DOE 1-10,

DEPOSITION OF:

FREDERICK LICCIARDI

T R A N S C R I P T of the stenographic notes of the proceedings in the above-titled matter, as taken by PHILIP A. FISHMAN, a Certified Shorthand Reporter and Notary Public of the State of New Jersey, held at the offices of Dr. Frederick Licciardi, 660 First Avenue, New York, New York, on Wednesday, March 11, 2009, commencing at 3:00 in the afternoon.

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A P P E A R A N C E S :

NUSSBAUM, STEIN, GOLDSTEIN, BRONSTEIN & KRON, ESQS.
BY: LEWIS STEIN, ESQ.
Appearing on behalf of the Plaintiffs

STEPHEN N. LEUCHTMAN, P.C.
BY: STEPHEN N. LEUCHTMAN, ESQ.
Appearing on behalf of the Defendant Genesis Genetics Institute, L.L.C., and Dr. Hughes

MARSHALL, DENNEHEY, WARNER, COLEMAN & GOGGIN, ESQS.
BY: R. SCOTT EICHHORN, ESQ.
Appearing on behalf of the Defendants New York University School of Medicine and New York University Hospitals Center

* * *

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F R E D E R I C K L I C C I A R D I, 660 First Avenue, New York, New York, having been duly sworn according to law, testifies under oath as follows:

DIRECT-EXAMINATION BY MR. STEIN:

Q. Dr. Licciardi, obviously, we are here to take your deposition, which is just a multi-syllable word for a question and answer session, in which my questions and your answers are being transcribed by the gentleman who sits to my left and your right, who is a Certified Shorthand Reporter.

And if this case goes to trial, what you say here may be used in court as evidence, so with those instructions, let me tell you that you should treat this question with the same seriousness as if you were giving testimony in open court.

Do you understand that?

A. Yes.

Q. And, likewise, that's the reason you have been placed under oath, and I am sure you understand the meaning and significance of taking an oath before giving testimony.

Is that correct?

A. Yes.

Q. Have you had the opportunity to give a deposition in any other case before this?

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14:49:26 Is your compensation calculated in any way on the
14:49:30 services rendered to a patient in which you are not
14:49:34 personally involved even though they may be your
patient?
A. Yes.
14:49:44 Q. And what is your present title?
14:49:49 A. Associate Professor of OB-GYN.
14:49:54 Q. And do you have any directorships?
14:49:57 A. I am the Director of Egg Donation.
14:50:07 Q. And -- okay.
14:50:35 Tell us what your duties are here in your
14:50:36 capacity as Associate Professor.
14:50:42 A. I am a physician here at the NYU Fertility
14:50:46 Center.
14:50:46 Q. And what duties do you perform in that capacity?
14:50:55 A. I perform new patient consultations, ultrasounds,
14:50:58 reproductive surgery, invitro fertilization procedures.
14:51:07 Q. Now, the patients that you see are on occasion
14:51:12 referred for PDG testing. Is that correct?
14:51:16 A. Correct.
14:51:17 Q. Have you had any special testing in the PDG
14:51:22 testing and what is done to accomplish that?
14:51:25 A. I have done research in PGD.
14:51:28 Q. And what is -- what form of research did you do?
14:51:33 A. I perform research looking at methods for

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14:51:35 performing the biopsy procedure.
14:51:38 Q. And where did you do that research?
14:51:40 A. When I was a fellow at Cornell.
14:51:42 Q. And that would have been in the early 1900's?
14:51:46 A. Correct.
14:51:48 Q. Did you publish anything in that field?
14:51:51 A. I did.
14:51:51 Q. And what did you publish?
14:51:53 A. I would have to check my records.
14:51:55 Q. Do you have, very handily and without much
14:51:59 difficulty, your CV available for us to look at?
14:52:02 A. No.
14:52:03 Q. But you do have a CV which would list your
14:52:06 publications?
14:52:06 A. Yes.
14:52:08 MR. EICHHORN: I think I have it here, Lew.
14:52:33 I do have it, but I think it's in my
14:52:36 briefcase, which I think is over there.
14:52:39 I am quite sure I brought it with me.
14:52:42 MR. STEIN: This will save the necessity of
us returning to that subject at some later time.
THE WITNESS: I can call my assistant and
14:52:51 she can produce it if you want.
14:52:53 MR. EICHHORN: Here it is.
14:52:54 MR. STEIN: Thank you.

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14:53:00 Suppose you mark this P-1 with today's date,
14:53:04 and I will quickly go over it -- deal with it.
14:53:09 (CV is marked as Exhibit P-1 for
14:53:54 identification.)
14:53:54 (Whereupon, a discussion takes place off the
14:55:32 record.)
14:55:32 Q. Doctor, in the year 2003 you were a coauthor of a
14:55:36 paper or an abstract, "The Prognosis for Patients with a
14:55:40 Canceled IVF Cycle, American Society of Reproductive
14:55:43 Medicine," that may have been listed under "Abstract."
14:55:55 Was there any significance if you had a canceled
14:56:00 IVF cycle?
14:56:01 A. The object of that study was to let a patient --
14:56:05 give a patient a prognosis. The patient came through
14:56:08 for an IVF cycle and it was canceled. She naturally
14:56:12 wanted to know would she be canceled next time, what
14:56:14 does this mean for her long-term reproductive history,
14:56:18 and what we found is that most people who were canceled
14:56:20 actually went on to have a successful -- have a
14:56:25 retrieval and some of them were successful.
14:56:27 Q. And did the calculation occur as a result of any
14:56:32 particular medical condition or medical reason?
14:56:34 A. They were canceled because after being placed on
14:56:37 the medications to stimulate their ovaries for invitro
14:56:41 fertilization, it was deemed they did not produce enough

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14:56:43 follicles for retrieval.
14:57:37 Q. Doctor, once a patient has invitro fertilization
14:57:48 and had an implantation, can they become pregnant from
14:57:55 other sources than the implementation in the first
14:57:58 couple of weeks after that?
14:57:59 A. Yes.
14:58:02 Q. During the period of time from retrieval to
14:58:05 implementation in an amount of a week's time, can they
14:58:08 become pregnant from other sources during that period?
14:58:12 A. Yes.
14:58:56 Q. Doctor, in my quick review of your curriculum
14:58:59 vitae, which we marked P-1, I didn't see anything in
14:59:02 which -- any listing in which you published a peer
14:59:07 review journal or gave an abstract on PGD analysis.
14:59:14 Is that accurate?
14:59:15 A. No.
14:59:16 Q. Okay. Could you tell us what you published in
14:59:18 PGD or what abstract you have given on that?
15:00:06 A. Publication No. 3.
15:00:16 Q. All right.
15:00:16 Does that complete your answer?
15:00:19 Is there anything else in which you published on
15:00:21 PGD?
15:02:28 A. Yes, that completes my answer.
15:02:30 Q. Okay. Doctor, you have had an opportunity to

15:49:30 fragmentation or granularity?
15:49:33 A. Yes.
15:49:33 Q. What does "granularity" mean?
15:49:35 A. "Granularity" means if you look inside a cell and
see dark areas or granular areas.
15:49:40 Q. And that's a negative characteristic for ultimate
15:49:45 gestation?
15:49:45 A. We are not sure. We make note of it, but we are
15:49:48 not sure if that means much.
15:49:51 Q. Okay. And what about after "Embryo Description,"
15:49:58 we have a column known as "AH"?
15:50:01 A. That stands for "assessed hatching," which
15:50:05 "assessed hatching" means opening the shell, as I have
15:50:08 described, and it also in handwritten is "right biopsy"
15:50:13 above that.
15:50:15 Q. Okay. And we only have checkmarks.
15:50:18 Can I assume then that those cells with
15:50:24 checkmarks were biopsied?
15:50:25 A. Yes.
15:50:25 Q. What's the last column?
15:50:27 A. "Disposition," what do we end up doing with the
15:50:31 embryo, and "C" means "culture" and "D" means "discard"
15:50:36 and "R" means "research."
15:50:38 Q. Okay. Now, we have a day four?
15:51:13 MR. EICHHORN: What does "R" mean?

15:51:15 MR. STEIN: "Research."
15:51:18 THE WITNESS: "Research."
15:51:26 I don't have a day four.
15:51:27 Generally, we do not assess the embryos on
15:51:31 day four. Sometimes we do, but we may not.
15:51:33 Q. Would day three, when there is a biopsy, would
15:51:37 those cells then be sent to the laboratory, Genesis
15:51:41 Genetics, for analysis?
15:51:42 A. Yes.
15:51:42 Q. Now, at that time all of the cells are just
15:51:49 single cells from each embryo. Is that correct?
15:51:53 MR. EICHHORN: I am sorry.
15:51:54 Could you read that back?
15:51:55 (Whereupon, the court reporter reads as
15:52:05 requested.)
15:52:05 MR. STEIN: Let me withdraw that question.
15:52:07 I am going to make it a more precise
15:52:08 question.
15:52:09 MR. EICHHORN: Okay.
15:52:10 Q. Do I understand then, when the biopsy takes
15:52:12 place, a single cell has been retrieved from each of the
15:52:17 embryos that are designated and sent for analysis to
15:52:20 Genesis Genetics?
15:52:21 A. Yes.
15:52:21 Q. Is there any evaluation of the quality of the

15:52:29 cells or the quality of the embryos at the time that the
15:52:38 cells are sent to Genesis Genetics for evaluation?
15:52:42 A. We just make note if they are intact or not, in
15:52:45 other words, if the cell was ruptured or not during the
15:52:47 biopsy procedure.
15:52:50 Q. Are there any other characteristics of those
15:52:53 cells that are sent that are important to determine
15:52:56 their utility and later implantation?
15:52:58 A. No.
15:52:58 Q. Okay. What is the -- after the biopsy is taken
15:53:13 and the cells sent to Genesis Genetics -- by the way,
15:53:17 how are they sent?
15:53:18 A. I don't know.
15:53:22 Q. I take it that you, as a doctor, are not involved
15:53:26 in that mechanism by which these things go from a
15:53:30 laboratory to laboratory?
15:53:30 A. Correct.
15:53:32 Q. What's the next involvement of NYU in connection
15:53:37 with the cells that are sent to Genesis Genetics?
15:53:49 MR. EICHHORN: You mean after they send them
15:53:49 what do they do next with them?
15:53:49 MR. STEIN: Right.
15:53:49 What's the next involvement of NYU with
15:53:49 regard to either those cells or the results of
15:53:50 the analysis? What's the next thing that

15:53:53 happens?
15:53:53 A. We receive information from the testing
15:53:55 laboratory about the cells.
15:53:56 Q. And who gets that information?
15:53:59 A. The laboratory.
15:54:00 Q. The laboratory here at NYU?
15:54:02 A. Yes.
15:54:03 Q. What does the laboratory do with that
15:54:04 information?
15:54:05 A. They examine the information and then they will
15:54:09 bring the findings to one of the physicians.
15:54:11 Q. Okay. In connection with Mrs. Grossbaum, to whom
15:54:18 were those findings brought?
15:54:19 A. To me.
15:54:21 Q. And are those findings of the laboratory, that
15:54:27 is, the laboratory that did the genetic analysis,
15:54:30 included in the chart?
15:54:31 A. Yes.
15:54:33 Q. And do you have those results in this chart?
15:54:35 A. Yes.
15:54:36 Q. And after you get the results, do you make a
15:54:39 determination as to whether the embryos are -- where was
15:54:44 that?
15:54:44 After you get the results of the analysis by
15:54:48 Genesis Genetics, was it you who made the determination

as to the suitability of any embryos for invitro fertilization?
A. That determination is made in conjunction with myself and the laboratory person who is in charge of the case.
Q. And who was the person -- laboratory person in charge of the eggs here?
A. Alexis Adler.
MR. LEUCHTMAN: I am sorry.
I didn't catch that.
THE WITNESS: Alexis Adler.
MR. LEUCHTMAN: Thank you.
Q. Can you tell me a little bit Alexis Adler, what is her background and qualifications?
A. Alexis Adler has been doing Invitro fertilization since before 1992, probably before 1988.
I don't know the exact date.
Q. Okay. And is she a nurse? Is she -- does she have any other special training other than experience here in the invitro fertilization laboratory?
A. That's her role, laboratory personnel.
Q. Okay. So then -- but you are, I take it, the ultimate determinant as to whether the embryos are suitable for invitro fertilization. Is that correct?
A. That is correct.

Q. Okay. Do you have the record of what was reported to you by Genesis Genetics?
A. Yes.
MR. EICHHORN: I wonder if we should close that window. It's getting pretty loud.
MR. STEIN: Were you -- if you would like to do it.
MR. LEUCHTMAN: Some kind of interference.
I am getting a sort of buzzing kind of noise.
Does somebody have something near the speaker?
THE WITNESS: A jackhammer.
MR. EICHHORN: Yes. Some power equipment outside.
MR. LEUCHTMAN: Okay. It's only been doing it the last couple --
MR. EICHHORN: The doctor closed the window.
MR. LEUCHTMAN: That's much better.
MR. EICHHORN: Thank you.
THE WITNESS: Sure.
MR. EICHHORN: Did we have a question pending?
MR. STEIN: Yes.
MR. STEIN: Would you mark this a number, please.

MR. LEUCHTMAN: You are marking the page.
Is this the page, Morganstern Grossbaum results?
MR. STEIN: That's correct.
Q. Doctor, I show you a document which we have marked P-6 for identification and ask you if you have the actual chart copy of that document?
A. Yes, I do.
Q. And is that an accurate photocopy?
A. It is.
Q. Okay. Now, Doctor, is this the report that you received from Genesis Genetics?
A. Yes.
Q. Did you receive anything else from Genesis Genetics regarding the studies that were done at Genesis Genetics?
A. This was the page that I used.
Q. Okay. But you didn't answer the question.
A. Yes, there are other records from Genesis in the chart.
Q. Okay. Regarding the results of this study?
A. Yes.
Q. Could you show me what they are?
A. Sure.

MR. EICHHORN: I think those were these.
He is referring to these, which I sent to him.
THE WITNESS: I see.
MR. STEIN: Okay. Let me see what you are referring to.
MR. EICHHORN: Well, there is a letter here.
I can show you what the documents are.
The letter is from the person at the hospital, so I will take that off, but these are the records I sent to him.
MR. STEIN: Well, at this juncture there is a question on the table.
Q. And that question is, what is in the chart from Genesis Genetics regarding their studies of this patient's embryos other than the page which we have marked P-6 for identification?
A. There is nothing else.
Q. Okay. May I see -- may I see the chart, please.
MR. EICHHORN: Don't forget to give those back to me.
MR. STEIN: We won't.
Q. Okay.
MR. STEIN: I am going to put a sticker on this page and then I am going to show it to you.

16:02:49 The next number.
16:02:50 MR. EICHHORN: It's a different page.
16:02:51 MR. STEIN: A different page, yes.
(Genesis Genetics Institute Fax Page is marked as Exhibit P-7 for identification.)
16:03:26 Q. Doctor, in the yellow folder I show you one of the pages, which we have marked as P-7 for identification, and ask you if you can tell me what that is.
16:03:37 A. This is a fax cover sheet.
16:03:41 Q. Okay. And it appears to be a fax cover sheet from Genesis Genetics transmitting their report, does it not?
16:03:47 A. Yes.
16:03:48 Q. And according to that fax cover sheet, including the cover, two pages were faxed. Is that correct?
16:03:55 A. That's what it says.
16:03:59 Q. And we have the cover sheet as one page, and we have what appears to be P-6, which is the report that you referred to. Is that correct?
16:04:07 A. Yes.
16:04:07 Q. Okay.
16:04:09 MR. EICHHORN: What's the date on that?
16:04:12 MR. STEIN: 7/19/2004.
16:04:14 Q. What's the date on the cover sheet?

16:04:17 A. 7/19/2004.
16:04:20 Q. Okay. Doctor, I spent some time with you on the report.
16:04:26 A. Sure.
16:04:29 Q. Now, the patient is identified as "Chaya Morganstern Grossbaum, a carrier, and Exon 11" as the number.
16:04:32 Can you just tell me what "Exon 11" means?
16:04:35 A. That's the portion of the DNA that has the genetic abnormality.
16:04:40 Q. And the genetic abnormality has a label, and it's "G542X abnormality." Is that correct?
16:04:44 A. Correct.
16:04:47 Q. What does "Nt 175 bg, greater and one" mean?
16:04:50 A. I don't know.
16:04:55 MR. EICHHORN: Greater than small "t."
16:04:58 Q. That's right.
16:04:59 You don't know?
16:05:08 A. No. Correct.
16:05:09 Q. And the husband, obviously, is listed as Menachem and has the abnormality labeled dF508, again, with the number attached to it. Is that correct?
16:05:11 A. Yes.
16:05:12 Q. And what does "CTT" mean?
16:05:14 A. Those are designations for portions of DNA.
16:05:15
16:05:19
16:05:27
16:05:28
16:05:33

16:05:38 Q. Okay. So now we have a documentation of when the biopsy was done according to the information provided by NYU to Genesis Genetics. Is that right?
16:05:46 A. Yes.
16:05:51 Q. And they refer to quality designations on a one to four scale where one is best and, of course, the 20 total tubes are "10 cells" and "10 blanks," and I assume that the blanks are sent to rule out contamination?
16:05:55 A. Correct.
16:05:56 Q. Now, in the first column each of the samples has a designated number, and only those cells in embryos, which were deemed useful are sent, I take it. Is that correct?
16:05:59 A. Yes.
16:06:06 Q. Now, then we have "Quality." We see numbers "2-8C, 2-3C."
16:06:10 What does that mean?
16:06:14 A. I don't know.
16:06:18 Q. Well, we have a column "CF 10," and as we go down we see the words "no deletion."
16:06:21 What does that mean?
16:06:28 A. "No deletion" means no deletion.
16:06:31 Q. What does that --
16:06:31 A. Nothing about that Exon 10 showed that there was a deletion there, because Exon 10, that's the problem.
16:06:32
16:06:40
16:06:43
16:06:45
16:06:50
16:06:55
16:06:57
16:07:01
16:07:05
16:07:06
16:07:11

16:07:15 There is a deletion in the CCT region and that was not detected.
16:07:19 Q. Okay. Help us understand what the words "no deletion" refer to.
16:07:21 Could you be more expressive, please?
16:07:26 A. Well, there are many, many reasons.
16:07:27 Cystic fibrosis is a very large gene and any problem anywhere along that gene could cause the gene faulty, it could render the gene faulty.
16:07:29 Q. By "faulty" you mean?
16:07:32 A. Nonfunctioning.
16:07:35 Q. Abnormal, nonfunctioning?
16:07:39 A. Not functioning properly.
16:07:42 Q. Could that mean that the gene would be susceptible to communicating the cystic fibrosis deformity to any baby that was born?
16:07:44 A. Correct, and in the case where it says "CF 10," according to the designation here, it's caused by a deletion in the CCT region and, therefore, they tested for the deletion in that CCT region, and if there was no deletion, it was deemed normal.
16:07:45 Q. Okay. So the CF -- so Sample No. 2 was deemed normal on the husband's cells. Is that right?
16:07:48 A. That is correct.
16:07:49 Q. Okay. Now, with regard to Samples 3, 4 and 7, we
16:07:52
16:08:00
16:08:03
16:08:09
16:08:12
16:08:16
16:08:20
16:08:22
16:08:30
16:08:40
16:08:41

see the words "no amp."
What does that mean?
A. That means there was no amplification.
There was no -- there was no -- the tests -- test was run of that region of the DNA; however, an answer was not determined.
Q. Do you know the nature of the test that's run?
A. I do not.
Q. Are you familiar with testing of cells to determine the presence of a cystic fibrosis mutation?
A. I am aware of some methods, but I am not aware of all the methods used.
Q. Okay. Can you describe what methods you are aware of?
A. Well, one way to test would be to amplify the DNA using PCR technology and then analyzing that DNA that's been amplified to see if it contains a problem in the region that you are looking for.
Q. Okay. So if there is no amplification, that means you can't look at the gene to determine whether or not there is amplification. Is that correct?
A. Right.
Q. So with regard to the husband's genes, they were only able to determine the presence of the cystic fibrosis mutation or absence of it in one, two, three,

four -- three of the ten samples. Is that correct?
A. Correct.
Q. Okay. Now, with regard to the mother, we see -- the mother is CF11. Is that right?
A. Correct.
Q. We see, with regard to Sample 2, "T only."
What does "T only" mean?
A. I don't know.
Q. Regarding three, there was no amplification.
No regarding four and seven, the letter "G" appears there.
What does "G" mean?
A. I don't know.
Q. And with regard to eight, there is a "G/T."
What does that mean?
A. I don't know.
Q. And regarding -- now, we move over to "Call." What's the meaning of "Call"?
A. I am sorry. Where is "Call"?
MR. EICHHORN: The last --
THE WITNESS: I see.
Q. What does "Call" mean?
A. What is their assessment of that embryo that was tested.
Q. Okay. So Sample 2 is "Possibly affected," and it

says "ADO paternal," and I assume the letters "ADO" mean allele drop out?
A. Yes.
Q. What is the mechanism of allele dropout?
A. When the test is performed and you don't get your answer, the feeling is you were unable to test for one of the alleles.
Q. No. 3, "No molecular signal," I take it that's not an embryo that can be successfully used for invitro fertilization. Is that right?
A. Correct.
Q. No. 4 says "Carrier at worst."
What does that mean?
A. That means that one gene has been determined to be a cystic fibrosis gene and one gene has not, or it means that there was one gene assessed that is not a carrier and the other gene was unable to be assessed.
Q. Okay.
MR. EICHHORN: Can you read that answer back, please?
(Whereupon, the court reporter reads as requested.)
MR. EICHHORN: Thank you.
Q. With regard to a -- to Sample 4, what are you told about the suitability for implantation?

THE WITNESS: I am sorry for interrupting. I notice that we don't have our call.
MR. EICHHORN: You're right. We lost him.
(Whereupon, a discussion takes place off the record.)
MR. EICHHORN: The reporter will read you back -- did you hear the answer to the question?
MR. LEUCHTMAN: I believe I did.
MR. EICHHORN: Okay. Good. Then we will go on.
MR. LEUCHTMAN: All right.
Q. Is Sample No. 4 suitable for implantation?
A. It states "Carrier at worst."
Q. How about my question?
A. Yes.
Q. Is it suitable for implantation?
A. If after discussion with the couple and the laboratory director, it's deemed that it's suitable for transfer, then, yes, we will transfer that embryo.
Q. And the discussion with the couple and the laboratory director -- who is the laboratory director in this case?
A. Alexis Adler.
Q. Okay. And that discussion involved you as well?

16:15:56 A. Yes.
16:15:56 Q. Did that discussion take place?
16:15:58 A. Yes.
Q. And is there a record of that discussion in your chart?
16:16:02 A. There is not, but it's -- I wouldn't do a
16:16:06 transfer in a scenario like this without having a
16:16:10 discussion about it.
16:16:11 Q. And what does the "scenario like this" mean?
16:16:14 A. Where there is an embryo biopsy and results need
16:16:17 to be discussed, et cetera.
16:16:18 Q. Do you discuss it with every family that has an
16:16:24 analysis of PGD testing for a potential cystic fibrosis
16:16:29 baby?
16:16:30 A. Yes.
16:16:31 Q. And what did you tell the family here?
16:16:36 A. That she has had an analysis of her embryos and
16:16:42 there are really two analysis.
16:16:43 There is the genetic analysis that Dr. Hughes
16:16:45 provided, but there is also our analysis how well the
16:16:48 embryos are growing, and we need to use both of those
16:16:52 specific information to determine which embryos to
16:16:55 transfer.
16:16:55 In other words, if we have an embryo that's a
16:17:00 nonaffected cystic fibrosis embryo, but it's a very poor

16:18:23 Q. A "carrier," a
16:18:28 A. By one or the o
16:18:30 Q. But not both?
16:18:31 A. Correct.
16:18:32 Q. Okay. Now we get dc
16:18:39 "Carrier maternal okay for trar
16:18:41 What does that mean?
16:18:43 A. That means that that embr ey
16:18:46 had completed genetic -- they had r etic
16:18:52 results on both the CF10 and CF11.
16:18:58 Q. And that one is okay for transfer?
16:19:09 A. According to Dr. Hughes, yes.
16:19:09 Q. But he doesn't say that seven is okay for
16:19:09 transfer or that four is okay for transfer?
16:19:11 A. No, he doesn't say it's not okay for transfer.
16:19:15 Q. Okay.
16:19:30 MR. STEIN: Can someone tell me what the
16:19:31 bells are?
16:19:32 MR. EICHHORN: It's my phone.
16:19:33 I am sorry.
16:19:34 MR. STEIN: That's okay.
16:19:34 Q. In this case an election was made to transfer not
16:19:42 eight and ten, but two other -- but other embryos. Is
16:19:47 that right?
16:19:47 A. That's right.

16:17:04 looking embryo, then that embryo will have a low
16:17:09 priority for transfer.
16:17:11 If we have a beautiful embryo that's a cystic
16:17:15 fibrosis embryo, that embryo will not be transferred.
16:17:18 If we have an embryo that looks very nice and
16:17:20 maybe a carrier or is a carrier, then that transfer may
16:17:26 be -- that embryo may be a candidate for transfer.
16:17:32 Q. That's because only one of the two genetic
16:17:36 materials is a carrier. Is that right?
16:17:37 A. Yes. Abnormal. Only one of the two is abnormal.
16:17:41 Q. Okay. Four and seven samples are described, four
16:17:49 and seven samples are described by Dr. Hughes as
16:17:52 "Carrier at worst." Is that right?
16:17:54 A. Yes.
16:18:03 Q. And is it -- does it ever say "carrier at best"?
16:18:07 A. I don't see that written here.
16:18:08 Q. Does that mean anything, the words "Carrier at
16:18:11 worst," to you?
16:18:12 MR. EICHHORN: "Carrier at worst"?
16:18:13 MR. STEIN: Yes.
MR. EICHHORN: Does it mean anything?
A. Yes.
16:18:16 Q. It means it's suitable for transplant?
16:18:18 A. It means the worst-case scenario would be that
16:18:21 that embryo is a carrier.

16:19:47 MR. EICHHORN: Objection to the form.
16:19:48 Q. What embryo samples were implanted in invitro
16:19:56 fertilization?
16:19:59 A. Embryo No. 7 and Embryo No. 8.
16:20:05 Q. And ten was not acceptable because of the
16:20:08 condition of the embryos at the time you determined
16:20:12 implantation. Is that right?
16:20:14 A. That's correct.
16:20:40 Q. Now, did the cells continue to divide while in
16:20:44 the possession of Genesis Genetics?
16:20:47 A. I don't know.
16:20:50 Q. Well, would Genesis Genetics have more than one
16:20:53 cell to examine from each of the embryos?
16:20:57 A. Occasionally they do, but I don't see the
16:21:02 document that shows that one cell was sent per embryo.
16:21:08 Q. I am sorry?
16:21:12 A. One cell was sent per embryo.
16:21:16 Q. So then Dr. Hughes would only have one cell per
16:21:20 embryo to examine and report on?
16:21:21 A. That's correct.
16:21:22 Q. On an occasion do you send more than one cell per
16:21:26 embryo?
16:21:27 A. On occasion.
16:21:27 Q. What determines whether you send more than one?
16:21:30 A. I am not sure.

A. I don't know, because I am not completely familiar with the techniques that Dr. Hughes is using in his laboratory, so I don't know.
Q. Well, is it common for other laboratories to get back or report that seven out of ten of one of the mutations is not available for analysis?
A. It's more than average.
Q. Okay. Does the -- taking into consideration the risk of allele drop out, does the fact that seven out of ten of the samples did not allow a DNA analysis, increase the risk of a false diagnosis?
A. This is something which Dr. Hughes would be an expert on, and I am not sure.
Q. It doesn't fall within your expertise?
A. It does not.
Q. Well, suppose only one of the ten were reported as having a DNA signal, would you be troubled by that analysis by the laboratory in the advising of your patient as to whether to go ahead with invitro fertilization?
MR. EICHHORN: Objection to the form.
I think it's improper.
MR. LEUCHTMAN: I will join in that.
MR. EICHHORN: I think a hypothetical is an improper question, but you can answer it if you

can.
A. I can't answer.
Q. Why can't you answer it?
A. Because every case is different.
Q. In what way?
A. Well, there may be certain circumstances which may lead to a laboratory telling me that they only have analysis on one.
Q. Let me ask you this: In this meeting that you have indicated took place with Chaya Grossbaum and her husband, I take it, both were present?
A. Yes.
Q. And what did you tell them?
A. Do you want me to go through the whole hour consultation?
MR. EICHHORN: Well, I don't think he means that meeting.
Do you mean the day of implantation?
MR. STEIN: Yes.
MR. EICHHORN: Or the first meeting?
Q. I mean after you got the report --
A. I see.
Q. -- from Genesis Genetics, you said you had a meeting --
A. Yes.

Q. -- with the parents, Mrs. Grossbaum and Mr. Grossbaum, regarding invitro fertilization of the embryos that had been retrieved. Is that correct?
A. That is correct.
Q. And that meeting took place here in your office?
A. Yes.
Q. And what did you tell them at that time?
A. I told them that there are -- we see the results for the analysis and there are embryos that had been determined to be carriers, and according to the report, Dr. Hughes' lab, they are carriers at worst and, therefore, we feel comfortable transferring them.
Q. And that was -- and that was the extent of the discussion --
A. Yes.
Q. -- you had with them? Is that correct?
A. That's correct.
Q. Do you know -- I may be asking this in a different way, but I do -- do I understand you don't have the expertise to explain why there is an inability to get a signal from a particular gene cell that's being analyzed?
A. I can tell you that I cannot be an expert in everything that goes on in Dr. Hughes' lab and he can't be an expert in everything that goes on here, so the

answer is I am not an expert in embryo biopsy DNA genetics.
Q. Well, when you receive a report from a laboratory such as Genesis Genetics, were you concerned about allele drop out?
A. Allele drop out is a possibility. However, that was signaled in Sample 2.
It said "ADO Paternal," allele drop out.
Q. Well, does that concern about allele drop out apply to all of the samples that are being reported on?
We are waiting your answer.
A. Yes, you are.
I am sorry.
Q. That's okay.
A. Can you repeat -- repeat the question, please?
(Whereupon, the court reporter reads as requested.)
A. I would have followed the recommendations of Dr. Hughes, and if he told me that allele drop out was a concern, I would have been concerned about it.
Q. And would you have advised the family of your concerns in that case?
A. Yes.
Q. Okay.
MR. STEIN: Next one.

EXHIBIT E

2981.101

UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY

CASE NO. 07-CV-1359 (HAA)

CHAYA GROSSBAUM and MENACHEM GROSSBAUM, her spouse, individually and as guardians ad litem of the infant ROSIE GROSSBAUM,

Plaintiffs,

vs.

GENESIS GENETICS INSTITUTE, LLC, of the State of Michigan, MARK R. HUGHES, NEW YORK UNIVERSITY SCHOOL OF MEDICINE and NEW YORK UNIVERSITY HOSPITAL CENTER, both corporations in the State of New York, ABC CORPS, 1-10, and JOHN DOES 1-10

Defendants.

- - - - - - - - - - - - - - - - - x

DEPOSITION UPON ORAL EXAMINATION OF:
MARK R. HUGHES, M.D.

TRANSCRIPT of the deposition of the witness, called for Oral Examination in the above-captioned matter, said deposition being taken pursuant to Notice, taken by and before KATHLEEN HAGEN, a Notary Public and Certified Shorthand Reporter of the State of New Jersey, at the law offices of NUSBAUM, STEIN, GOLDSTEIN, BRONSTEIN & KRON, P.A., 20 Commerce Boulevard, Succasunna, New Jersey, on Thursday, February 19, 2009, commencing at 10:30 a.m.

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M-A-R-K R. H-U-G-H-E-S, M.D., Ph.D., having offices at Genesis Genetics Institute, LLC, 5555 Conner Avenue, A22064, Detroit, Michigan, 48213, called as a witness, having been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION BY MR. STEIN:

Q Dr. Hughes, as you know, we're here to take your deposition. I take it that you have previously submitted to a deposition?

A Yes.

Q About how many occasions?

A Twice.

Q Well, before I ask you about those, permit me to give you some guidelines and instructions, which we should operate under during this question and answer session. First, I should tell you that my questions and your answers are being recorded by the lady who sits to my right and your left, who is a Certified Shorthand Reporter, and if this case goes to trial, what you say here may be used at trial, so you should treat this question and answer session with the same onus as if you were giving testimony in open court, even though we're here in the law office. Do you understand that?

A Um-hum, I do.

the New York area that funds their care, and so I'm aware, either because of their name it's likely or because this charity is funding their PGD, and then I would know that they're Jewish.
Q So in references that come out of New York City, are there a large number of people who you are referred to whose identity is Jewish, this comes to your attention?
A Not any more than any other ethnic background, but I don't ask if they're Jewish any more than I ask if they're Lutheran.
Q Okay, Doctor, let's now turn to your chart so that we can ask some questions about it. I notice that, in the box that appears on the pre-case folder PGD consent form, which I believe you have opened to your chart at the moment, is that correct?
A Yes.
Q I'm just curious, what is the diagram across the top, that starts with the left -- with a circle which says "day 0"?
A Yup.
Q Day 1, day 3, and can you tell me what the purpose of that is?
A Yes. What I learned early on is that IVF doctors do not understand genetics very well, any more

than I understand IVF. Generally, laboratories don't interact with patients. You could have a tumor from a cancer and send it to a lab, and there's no way you'd ever get to talk to the lab as a patient. Their job is to do their test, write a report, send it to the physician who referred it, interpret it, and tell you what it means. We found years ago that some involvement by the laboratory in educating the patient about the complexities of what they're asking for, and the reasonable risks and benefits, were important, and so, every patient that goes through our laboratory, we spend an hour on the phone with them in an educational session, making sure that they're aware of all of the steps that are involved, and that we're all on the same page. So this is a -- my notes from a phone conversation that I had with them on March 25, 2004, at noon, in which I explained to them in steps exactly what it is that we would do or what would be done. So the first little circle is an ovary, and I'm explaining to her that she has little dots, little eggs inside of her ovary since she was a fetus, and that they're going to give her hormones to cause some of those eggs to mature, that's what those arrows are for, and that they're going to move to the surfaces of her ovaries as something called a "follicle", the doctors would follow

that with an ultrasound, count them, adjust the hormones until it was time to collect them with a little needle in a surgical suite at the hospital. So I'm explaining what they're doing, the doctors are going to do, in order to explain to them how the IVF -- how the PGD fits into the IVF process. So on that day 0, the eggs are collected, they're put into a dish, that's what the next little picture is, an intracytoplastic sperm injection is performed on them, and on day 1, they do a fertilization check to see how many of those eggs actually fertilize. Now, while I'm explaining that and making notes on other pages, usually, I'm also running some numbers by them, which is the box on the left, so I'm saying, suppose it's reasonable, at this high quality IVF center, that you're going to take 6 eggs on each ovary for a total of 12 of them, and that maybe 10, making up numbers, but maybe 10 of those would actually fertilize, that's what the wavy ink equal sign is, it's like made up numbers, but to give them a sense how this works, the fact that you lose along the way as you go, then the next day, day 2 nothing happens, and then day 3, we should have 8 little cells in a cluster, pluripotent, p-l-u-r-i-p-o-t-e-n-t, cells, and that at this time the clinic would take a micro-pipette about 1/26th and

1/33nd the diameter of a human hair, and go in and biopsy and remove the smallest units of life, one cell from that cluster of cells. Now I have a branch point, the embryo stays at NYU and continues to grow into the incubator, in the incubator water, and that picture on the right is what a blastocyst looks like, I explained to them, and the little cell is put into a little tube, and there's some little dashes on the tube, that's a bar code, and there might be like eight of those tubes representing one cell marked carefully from each of those 8 embryos that they made up numbers, they send the cell to us, that double stranded thing coming out of the lower right-hand corner of that circle is DNA, I then explain to them that -- do you want me to keep going like this?
Q You might as well. In the box.
A Yeah, I explain to them that -- I explain to them basic genetics, at this point, so I tell them that, if you take any cell from your body, in fact, I can tell you exactly what I told them, because I said this hundreds of times, I can just spiel it forth for you, if you take any cell from your body, a skin cell or a brain cell, a liver cell or a cell from your embryo, and you pull out the DNA, the genetic information in there, the first thing that you'll

pre-implantation genetic diagnosis, and you can get pregnant and assume the risks that are inherent to the disease." You tell them that, is that right?
A Yes.
Q Now, you also seem to indicate that -- numerous times throughout your communication with the people, you suggest the requirement that they undergo amniocentesis or CV testing to confirm the information provided through PGD testing, is that correct?
A That's correct.
Q What -- if people are going to undergo amniocentesis or CV testing to protect themselves against having to endure the birth of a CF baby, what would be the reason for them to undergo the expense and inconvenience of PGD testing?
A To dramatically lower their risk. These couples will tell you, especially if they already have a child with the disease, that they are coming in saying, We know our risks are 25 percent, and we take this personally, we gave this to our baby, we don't want it to happen again, and 1 in 4 is pretty high odds, and so we want those risks reduced.
Q Well, they're still protected against having the baby if they do amniocentesis or CV testing, aren't they?

A They are, but they've got 15 weeks of incredibly high anxiety while they're waiting to have the procedure, and then, after you do an amniocentesis or a CVS, the sample for which you have hundreds of thousands of cells is taken to a laboratory and cultured for another week, and then it's tested in the laboratory, over the course of another week, so all of a sudden, they're at 16, sometimes 17, sometimes longer weeks waiting for the results of their pregnancy, and nobody wants to go through that, if they can help it, so by starting their pregnancy knowing that their risks are dramatically reduced, it makes it all that much more tenable; these couples will tell you that the risk is so high, that they're afraid to even have sex, oftentimes, because the risks are high. Not all patients say that, but many do, and so they come to this pretty amazing hoop jumping to build a family, and they don't need this, they go through it to lower their risks, not to zero, but a lot.
Q Well, in connection with your experience, to what number do they lower it?
A Less than 2 percent, significantly less than 2 percent, but it depends on the disease.
Q Well, we're talking here today only about CF.

A Well, if we've had four errors in 1000 cases, it's significantly less than 1 percent.
Q And you figure you tell the people that?
A Yeah, we'll tell them -- the field of PGD quotes a risk of 3 to 5 percent error for this kind of testing, and for chromosome testing, it's even higher, and now as we are learning about the amazing discrepancies of cells inside of an embryo, we're learning that there's all sorts of reasons why a cell that you biopsy might not represent the whole embryo, so the field across the world quotes risks in 3, 4, 5 percent. In our personal program, it's less than 2, actually less than 1.
Q Okay. Do you have a reason as to why your program experiences, as you indicated, even less than 1 percent in the field and the field is quoting 3 to 5?
A Well, we do more of this than any other laboratory in the world, we've been doing it longer than any other laboratory in the world, so I think experience has something to do with it, but we know that in each family, so none of these tests are off the shelf, every one of them are custom designed for the unique DNA of each couple, because your DNA is unique on the planet, and the DNA that you and your partner mix together to make a baby is unique, and every time

you do it, it's different and unique, and so the test that we make for you is designed specifically for you, so to tell somebody that a particular test has been done so many thousands of times and the liability is such and such, is true to a point of all of the PGD that's been done, but we tell them that your test will never have been used before on embryos that the two of you have made, for the mutations that you have, and it's not likely that it will ever be used again.
Q Well, even though the test may be unique to the individual DNA of a particular couple, is the formula by which you approach and design the test the same?
A The formula for the mutations that the couple has starts out the same, and then it's modified, based on their DNA sequences.
Q Okay.
A So we spend some weeks optimizing their test, prior to the case, to be sure that it will work.
Q When you, as you indicate, spend weeks prior to the test, I take it, designing the test that's going to work with this family, is that what you're saying?
A Yes.
Q And what do you -- I take it that you

EXHIBIT F

IN THE UNITED STATES DISTRICT COURT
IN THE DISTRICT OF NEW JERSEY
----------/
CHAYA GROSSBAUM and MENCHEN GROSSBAUM, Her Spouse, Individually, and as Guardian ad litem of the Infant, ROSIE GROSSBAUM,

Plaintiffs,

-vs- Index No. 07-CV-359

GENESIS GENETICS INSTITUTE, LLC, OF THE STATE OF MICHIGAN, MARK R. HUGHES, M.D., NEW YORK UNIVERSITY SCHOOL OF MEDICINE, and NEW YORK UNIVERSITY HOSPITALS CENTER, both Corporations of the State of New York, ABC CORPORATIONS: 1-10 and John Doe,

Defendants.

_____/

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The Deposition of DR. MARK HUGHES,
Taken at 1380 Trowbridge Place,
Detroit, Michigan,
Commencing at 12:55 p.m.,

Q. Okay. And I take it that you suggested that is not a contact with a patient in the sense that a doctor has contact with patients, is that correct?

A. In general laboratories never talk to patients. They do the test that was ordered, they write a report, they send it to the person who ordered the test, and that's the extent of it. In the field of PGD, the few of us that do this feel that it's more important to communicate beforehand with the patient about the risks and benefits of the procedure. Because sometimes the doctors at the clinics don't necessarily know the nuances of the latest. They're IVF experts, not genetic experts. So from a perspective of an informed consent, we take and go the extra mile and spend time with them, a significant amount of time with them, explaining to them the steps involved.

Q. Now, have you ever encountered the issue with regard to practicing medicine in the State of Michigan under its rules and regulations for the medical profession?

MR. LEUCHTMAN: Encountered what issue? Object to the form of the question as vague and ambiguous.

MR. STEIN: I'll rephrase it.

BY MR. STEIN:

Q. Has the issue ever been raised with the regulatory authorities in Michigan who regulate the practice of medicine as to whether or not the contacts that you have

letter, a single molecule. And 100 years from now the technology can't be smaller than that. And we have to do it overnight. So the point that we make to the patients, which is the reason why not only does the laboratory have an informed consent, but the clinic does, is to reiterate recovery and over that this is the limits of medical diagnostic testing. In fact, it's been that way for 20 years.

Q. Well, I think you've indicated in Hughes 1 that at the time of that deposition you had done over a thousand cases, is that right?

A. Oh, yeah.

Q. And you're aware of the clinic that Dr. Xu -- that is the laboratory that Dr. Xu is connected with, the Center For Reproductive Medicine and Infertility in New York, are you not?

A. Um-hum (affirmatively). I am.

Q. And are you aware that that laboratory and that clinic has done over 3,000 cases of PGD?

A. Well, there's a nomenclature issue here.

Q. Okay. And what is that?

A. Cornell does a technique called PGS, Preimplantation Genetic Screening. This is a technique that was in vogue in the mid-2000's, in which you look at chromosomes. But they send almost all of their single-gene tests to us.

between three and five percent, is that correct?
A. That's the risk that's quoted around the world in other PGD programs, and in general the genetic counselors quote that number. In our group it isn't that high, but that's the number that's been sort of announced by --
Q. Okay. Can you tell me, when you say that's announced by other groups and around the world, where are these announcements made? What specifically are you referring to?
A. So at scientific meetings people stand up and talk about the error rates that they see.
Q. And you have a specific recollection of people standing -- of particular people standing up?
A. Sure.
Q. Okay. What group or what person in these meetings do you recall standing up and they have an error rate of three to five percent?
A. They don't necessarily say that they have an error rate. They quote that as the rate in the field.
Q. Okay.
A. And I've always thought that was high.
Q. Okay. In other words, individuals have stated at meetings, who are attending the meetings and are working in the field, that the error rate in the field in general is three to five percent, is that correct?

Q. And your rate is less than one-half of one percent, is it not?
A. No. Our rate runs between one and two, depending on the year.
Q. So each year you have one to two percent misdiagnosis?
A. 1.2, 1.3, 1.4, 1.5.
Q. Now, is that specifically with respect to cystic fibrosis, or is that with respect to all --
A. No. That's all diseases.
Q. And how many do you do a year?
A. I can tell you what we did in 2004.
Q. How many did you do in 2004?
A. I wrote the numbers down. We did 582 cycles.
Q. And you have that specifically available to you, you wrote it down?
A. I wrote it down before I came over here. Because I figured you'd ask.
Q. Okay. And what did you write it down on?
A. (No response).
Q. What did you write it down on?
A. I just wrote it in the corner here on this piece of paper.
Q. Before you came over here?
A. No. I had it in my mind. But I knew the question was coming, so I scribbled it over here so I wouldn't forget

MR. STEIN: Okay.

BY MR. STEIN:

Q. Can you answer the question, please?

A. A formal report is done on stationery with an explanation with lots more information. This was -- the purpose of this was for the NYU team to be able to see that there were embryos predicted suitable to be transferred, and act on it if they wish. So it's not like it's wrong, it's that it's not complete. And it takes a while to do a longer one. And so we sent this to them fully expecting them to read it and act on it. That's fine. There's nothing wrong with it.

Q. This bears electronically signed your signature. Can we understand that by the presence of your electrically signed signature this is a document that you endorse by way of the content, or either created yourself or had someone create and then have you read it and endorse it?

A. This was put together by a lab person who electronically puts my name on it and sends it to the clinic.

Q. Now, in connection with reporting the results of lab studies , is it important in the custom and habit of the laboratory to document the transmittal of your report to the clinic?

A. I'm not sure what you mean.

Q. Well, is it customary -- withdraw that.

A. Yes.
Q. Now, in the preliminary report that you sent, as you described it, we've marked P5, you discuss allele dropout, don't you?
A. Yes. Well, I mentioned it in -- it's mentioned in sample two.
Q. Now, just so I'm clear, is it not anticipated that the clinic will proceed with IVF based on the form of report that is present and marked P5?
MR. HAMAD: Asked and answered, three questions ago.
THE WITNESS: This report is sent to them just like any laboratory report. They review it, they make a decision in the best interests of the patient, I hope, and I don't have any assumptions about which ones they're going to transfer. In fact, earlier this week a couple elected to take two embryos that were affected, so --
BY MR. STEIN:
Q. Aside from what the couples intend to do as a result of the decision, you are presuming when you send P5 that the fertility clinic will act on the content of the information contained in P5, are you not?
A. No. I'm sending them information. What they do with it at that point is completely up to them. They can say we don't like any of this, they can say we're going to

transfer five embryos, they can say we're going to freeze all of them, or we're going to discard all of them, or they can have a conversation with the patient. They're going to decide what they want to do with the data.

Q. But they're going to rely on the information in the form presented on P5, are they not? Wouldn't you anticipate that?

A. I would anticipate that that would be a piece of their decision-making process, yes.

Q. And in that piece you write with respect to embryo sample number two that possibly affected was ADO paternal, is that right?

A. Yes.

Q. And that's because there was no deletion, is that right?

A. It's because we're seeing the mutation in exon 11.

Q. All right.

A. And there could be a little dropout of 10.

Q. But as far as you know from 10, what you've got in the results of your analysis was that the mutation was not present in 10, is that right?

A. The mutation is present in 11.

Q. Right.

A. And we couldn't see the mutation in 10.

Q. So if the mutation is present only in 11 and you don't see the mutation in 10, then why would that sample number

EXHIBIT G

Morganstern-Grossbaum results – 07/19/2004

Patient: Chaya Morganstern-Grossbaum – carrier - Exon 11, G542X Nt1756g>t
Partner: Menachem Grossbaum – carrier - Exon 10, dF508:Nt1652 delCTT

Locus ID: 1080 Chromosome: 7q31.2 Gene: CFTR
OMIM: 602421

Biopsy done 7/17/2004 – began 10 am EDT, completed 11 am EDT
Quality is 1-4, where 1 is best
20 total tubes – 10 cells, 10 blanks

Sample	Quality	CF 10	CF 11	Call
2	2-8c	No deletion	T only	Possibly affected – ADO paternal
3	2-3c	No amp	No amp	No molecular signal
4	2-4c	No amp	G	Carrier at worst
7	2-7c	No amp	G	Carrier at worst
8	2-8c	No deletion	G/T	Carrier maternal – OK for transfer
9	2-4c	No amp	No amp	No molecular signal
10	2-4c	No deletion	G/T	Carrier maternal – OK for transfer
13	2-4c	No amp	G	Carrier at worst
14	2.-7c	No amp	No amp	No molecular signal
15	2-4c	No amp	G	Carrier at worst
CG		No deletion	G/T	Control – as expected
MG		Het. deletion	G	Control - as expected

Note: For sample 2, since only the mutant maternal allele was observed, it is possible that the paternal allele also dropped out of CF 10, and could be affected.

All controls and media blanks worked as expected. These data are very clear. All media blanks showed no evidence of exogenous DNA contamination.

Electronically signed,

Mark Hughes, M.D. Ph.D.

EXHIBIT H

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY
DOCKET NO. 07-CV-359

CHAYA GROSSBAUM and MENCHEM GROSSBAUM, her spouse, individually, as guardians ad litem of the infant, ROSIE GROSSBAUM,

Plaintiffs,

v.

GENESIS GENETICS INSTITUTE, L.L.C., of the State of Michigan, MARK R. HUGHES, M.D., NEW YORK UNIVERSITY SCHOOL OF MEDICINE and NEW YORK UNIVERSITY HOSPITALS CENTER, both corporations in the State of New York, ABC CORPORATIONS 1-10 and JOHN DOE 1-10,

DEPOSITION OF:

JAMES GRIFO

T R A N S C R I P T of the stenographic notes of the proceedings in the above-titled matter, as taken by PHILIP A. FISHMAN, a Certified Shorthand Reporter and Notary Public of the State of New Jersey, held at the offices of DR. JAMES GRIFO, 660 First Avenue, New York, New York, on Wednesday, June 24, 2009, commencing at 4:00 in the afternoon.

PHILIP A. FISHMAN
COURT REPORTING AGENCY
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I N D E X

I N D E X O F E X H I B I T S

A P P E A R A N C E S :

NUSSBAUM, STEIN, GOLDSTEIN, BRONSTEIN & KRON, ESQS.
BY: LEWIS STEIN, ESQ.
Appearing on behalf of the Plaintiffs

STEPHEN N. LEUCHTMAN, P.C.
BY: STEPHEN N. LEUCHTMAN, ESQ.
Appearing on behalf of the Defendant Genesis Genetics Institute, L.L.C., and Dr. Hughes

MARSHALL, DENNEHEY, WARNER, COLEMAN & GOGGIN, ESQS.
BY: JAMELE A. HAMAD, ESQ.
Appearing on behalf of the Defendants New York University School of Medicine and New York University Hospitals Center

* * *

J A M E S G R I F O, 660 First Avenue, New York, New York, having been duly sworn according to law, testifies under oath as follows:

DIRECT-EXAMINATION BY MR. STEIN:

Q. All right.

Dr. Grifo, good afternoon.

As you know, my name is Lewis Stein.

I represent the plaintiffs, the Grossbaums, in this lawsuit in which Genesis Genetics Institute and the NYU Medical Center has been named as a defendant.

We are here today to take your deposition.

Have you ever had the pleasure of giving a deposition before today?

A. Yes, sir.

Q. Could you just tell me generally what the circumstances were in which -- in other words, what type of case were you deposed in?

A. I don't recall the specifics. It was a medical malpractice case.

Q. Did it involve the NYU School of Medicine program for invitro fertilization and reproductive surgery and fertility?

A. Yes, sir.

Q. About how long ago was that?

A. I don't recall. Several years. I don't recall.

court rules are clear, the party noticing the deposition has to inform everybody, every other party, of the deposition.

This date was provided a long time ago.

THE WITNESS: Three weeks ago.

MR. HAMAD: Whether it was going to be one or two witnesses, that's immaterial.

You knew the deposition was going to take place here.

MR. LEUCHTMAN: Never.

MR. HAMAD: And that is the responsibility of the party taking the deposition.

This is my client. I am producing him. That's all I have to do.

With that being said -- you know -- yesterday at two PM was the first time this deposition was confirmed.

As per the court rules, 24 hours before the deposition at least we gave you proper notice, Mr. Stein -- you know -- if you did not notify Mr. Leuchtman, please don't put that on myself, my firm or my staff.

With that being said, what's the next question?

MR. STEIN: I disagree with 90 percent of

what you just said.

MR. HAMAD: As always. Let's move on.

MR. STEIN: Okay.

Q. Now, you have a document in your hand?

A. Yes, sir.

Q. Okay. Can you tell me from that document how many embryos were suitable for implantation?

MR. HAMAD: Objection to form.

According to this document, what this document says about that, that's it.

He is not making a clinical decision. He can read it for you, what it says about that. That's it.

You can't ask him opinion questions.

A. This document says that Embryo 4 is a carrier at worst. The patients are carriers. They are healthy.

Embryo 7 is a carrier at worst.

Embryo 8 is a carrier, maternal.

Embryo 13 is a carrier, and Embryo 15 is a carrier.

Q. Okay.

A. That's what this document says.

It also says -- the data are very clear. It also says the media blanks show no evidence of DNA contamination, which is one source of error.

Q. The fact that there was no DNA contamination, is that reported on the report or is that a decision made as a result of a conclusion you drew from reading the document?

MR. HAMAD: I think it's the last --

A. All media blanks showed no evidence of exogenous DNA contamination.

There were a number of media blanks that were sent along amplification which documents no contamination.

Do you want me to show that to you? I know what you are looking for.

Q. Do you have a copy of the chart, Doctor?

MR. HAMAD: What's the question pending? What exactly are you asking for?

MR. STEIN: I asked the doctor to have the chart available.

MR. HAMAD: It's available.

What would you like him to find?

MR. STEIN: You will find out when I ask my question.

MR. HAMAD: Okay. So then he will wait. What's there? Okay.

Sorry.

Q. Doctor, within the NYU chart, is there an

indication as to which embryos were deemed suitable for implantation by the NYU staff at the time that they were implanted?

A. Yes, and they correspond exactly what the document that we received from Mark Hughes' lab that we just reviewed.

Q. Okay. And, I think, you indicated that there were two determinations to be made, one, whether the genetic studies allowed the embryos under -- to be used based on the finding that they would not create a substantial risk of cystic fibrosis, and then there is another analysis made on the suitability of the embryo for survival purposes. Is that correct?

A. That is correct.

On the embryo tracking record it states that Embryo 4 is a carrier.

However, if you look at the embryologist's assessment, it's a cleavage embryo, which means it stopped developing and it's not likely to make the patient pregnant.

Embryo 7 was a more advanced embryo, and that was selected for transfer because it was the second most advanced embryo, and it was also listed as a carrier on the record.

Embryo No. 8, which is the most likely embryo to

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have produced the pregnancy based on its morphology, was the most advanced embryo, and that was selected for transfer because it was listed as a carrier.

Embryos 10, 13 and 15 were embryos that were still viable but had limited ability to make the patient pregnant, and they were not selected for transfer, and, indeed, the embryos that were not selected for transfer were looked at the following day, and none of them had continued to develop, and they were not going to make a pregnancy, and it was wise that we chose them not to be transferred, but if you look at the embryo morphology, Embryo No. 8 is the most likely embryo that made the pregnancy.

Q. Okay.

From your review of the chart that you just discussed, did you find any reason to believe that an allele drop out was a distinct concern in this sample set?

MR. HAMAD: Objection to form; asked and answered.

You can answer the question again providing the subject matter.

A. Which sample set are you talking about?

Q. The sample set received from Genesis Genetics with respect to this patient.

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A. I don't know what you are asking.

Q. Okay.

MR. HAMAD: Are you asking if allele drop out is a concern?

A. Allele drop out is always a concern.

Q. So you would not understand a comment describing this set of embryos of the Grossbaums as being a distinct concern for allele drop out. You wouldn't have any reason to characterize it in that fashion. Is that right?

MR. HAMAD: Objection to form.

MR. STEIN: Okay. You made your objection.

MR. HAMAD: Okay. And he just answered it. You can answer it again.

A. I don't understand the question. I know what you are driving at. Why don't you just ask me the question.

Q. Well, I thought I did.

MR. HAMAD: Apparently, it's not good.

MR. STEIN: Frankly, I was reading from a letter that Dr. Hughes said he sent to NYU, in which I quote, "Allele drop out is a distinct concern in the sample set."

MR. HAMAD: Mr. Stein, where are you reading from, counsel?

I am entitled to know what you're reading

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from, this language.

Where are you?

MR. STEIN: Well, if you would turn to the second page of P-6 for identification --

MR. HAMAD: Uh-huh.

MR. STEIN: -- and look at the last paragraph, you would see those words.

Okay, counsel?

MR. HAMAD: Sure.

Thank you.

Q. Now, that was the statement that I read to you, and I am asking you whether or not -- that's the formulation which caused me to ask the question in that way, so my question to you again is, do you have any reason to believe or understand allele drop out is a distinct concern in this sample set referring to the Grossbaums' sample set?

MR. HAMAD: I am going to put an objection on the record, only because you read him -- excuse me -- a six-letter -- a six-word -- seven-word sentence.

MR. STEIN: Fine.

MR. HAMAD: If you are going to ask him a question, let's be fair. Read him this three-line paragraph.

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MR. STEIN: I have decided to ask the question.

If you object, say "I object as to form," and then you place on the record your objection, and you can raise it at any time in any courtroom you want, counsel.

MR. HAMAD: Mr. Stein, with all due respect, you have been doing this a lot, I think.

I have a lot of respect for you.

This is a question to my client. You are asking him about a subpart of a three-line paragraph.

MR. HAMAD: Can you step outside for a moment and go off the record?

We are off the record for a second.

(Whereupon, a discussion takes place off the record.)

MR. HAMAD: Doctor, this is the quotation he is directing you to read.

MR. LEUCHTMAN: What is the quotation from?

MR. HAMAD: The quotation is from the second page of a report, which has three pages, which we did not receive, marked as P-9 on March 11, 2009.

MR. LEUCHTMAN: Who is the author of this?

MR. STEIN: Dr. Hughes.

EXHIBIT I

02981. 0010,

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

11:00:35

---------- X

CHAYA GROSSBAUM and MENCHEN GROSSBAUM, Her Spouse, Individually, and as Guardian ad litem of the Infant, ROSIE GROSSBAUM,

Plaintiffs,

-against-

Index No. 07-CV-359

GENESIS GENETICS INSTITUTE, LLC, OF THE STATE OF MICHIGAN, MARK R. HUGHES, M.D., NEW YORK UNIVERSITY SCHOOL OF MEDICINE, and NEW YORK UNIVERSITY HOSPITALS CENTER, both Corporations of the State of New York, ABC CORPORATIONS: 1-10 and John Doe

Defendants.

---------- X

132-26 Conduit Avenue
Jamaica, New York
May 4, 2010
10:30 a.m.

DEPOSITION of CHARLES STROM, M.D., PhD., an expert witness on behalf of the Plaintiff herein, taken by the Defendants pursuant to Article 31 of the Civil Practice Law and Rules of Testimony, and Notice, held at the above-mentioned time and place before Valerie Cannata, Shorthand Reporter and Notary Public of the State of New York.

APPEARANCES

NUSBAUM, STEIN, GOLDSTEIN BRONSTEIN & KRON, P.A.
Attorneys for Plaintiffs
20 Commerce Boulevard
Succasunna, New Jersey 07876

BY: LEWIS STEIN, ESQ.
BY: LYNN HARRISON, PARALEGAL

TROWBRIDGE LAW FIRM
Attorneys for Defendants
Genesis Genetics Institute , LLC
And Mark R. Hughes, M.D.

1380 East Jefferson Avenue
Detroit, Michigan 48207
BY: STEPHEN LEUCHTMAN, ESQ.

MARSHALL, DENNEHEY, WARNER COLEMAN & GOGGIN
Attorneys for Defendants
New York University School of Medicine and New York University Hospitals Center

425 Eagle Rock Avenue, Suite 302
Roseland, New Jersey 07068
BY: JAY A. HAMAD, ESQ.

ALSO PRESENT

WAYNE SALINE, VIDEOGRAPHER
VERITEXT, LLC
STANLEY DICKSON, GENESIS GENETICS

STIPULATIONS

IT IS HEREBY STIPULATED by and between the attorneys for the respective parties hereto that:

All rights provided by the C.P.L.R. and Part 221 of the Uniform Rules for the Conduct of Depositions, including the right to object to any question, except as to form, or to move to strike any testimony at this examination is reserved; and in addition, the failure to object to any question or to move to strike any testimony at this examination shall not be a bar or waiver to make such motion at, and is reserved to, the trial of this action.

This deposition may be sworn to by the witness being examined before a Notary Public other than the Notary Public before whom this examination was begun, but the failure to do so or to return the original of this deposition to counsel, shall not be deemed a waiver of the rights provided by Rule 3116 of the C.P.L.R., and shall be controlled thereby.

The filing of the original of this deposition is waived.

IT IS FURTHER STIPULATED that a copy of this examination shall be furnished to the attorney for the witness being examined without charge.

C. STROM, M.D., PhD.

THE VIDEOGRAPHER: My name is Wayne Saline of Veritext. The date today is May 4, 2010. The time is approximately 11:00. This deposition is being held at the Sheraton JFK located at 132-26 South Conduit Avenue, Jamaica, New York. 11:00:38 11:00:39 11:00:43 11:00:45 11:00:49 11:00:54

The caption of this case is Chaya Grossbaum and Menchen Grossbaum, her spouse individually and as guardians ad litem of the infant, Rosie Grossbaum, in the United States District Court of the District of New Jersey, docket number 07 CV 359. The name of the Witness is Dr. Charles Strom. 11:00:57 11:01:01 11:01:05 11:01:09 11:01:10 11:01:13 11:01:15 11:01:19

At this time, the Attorneys will introduce themselves and the parties they represent, after which our Court Reporter, Valerie Cannata, of Veritext will swear in the Witness and we can proceed. 11:01:21 11:01:21 11:01:24 11:01:28 11:01:31 11:01:32

MR. LEUCHTMAN: Stephen Leuchtman, taking the deposition today on behalf of Genesis Genetics and Dr. Mark Hughes. Also with me is Stanley Dickson, an officer in Genesis Genetics. 11:01:34 11:01:36 11:01:38 11:01:41 11:01:44

C. STROM, M.D., PhD.

MR. HAMAD: Jay Hamad of the Law Firm of Marshall, Dennehey, Warner, Coleman and Goggin. I'm on behalf of N.Y.U. Defendants. 11:01:46 11:01:46 11:01:48 11:01:49

MR. STEIN: Lewis Stein; Nusbaum, Stein, Goldstein, Bronstein and Kron on behalf of the Plaintiffs and before we swear the Witness, I'd just like to confirm on the record a conversation I had with Counsel for N.Y.U. that Dr. Strom having offered his opinion letter in the case did not mention any standard of care issues as to N.Y.U. He will not be offering any testimony regarding standard of care of N.Y.U. or members of the N.Y.U. community in connection with this deposition. 11:01:50 11:01:53 11:01:56 11:01:59 11:02:03 11:02:05 11:02:10 11:02:12 11:02:15 11:02:18 11:02:22 11:02:23

CHARLES STROM, M.D. PhD., the Witness herein, having first been duly sworn by a Notary Public of the State of New York, was examined and testified as follows: 11:02:36

THE REPORTER: What is your full name?

C. STROM, M.D., PhD.

A. Yes. 13:21:06
Q. Reprogenetics in New Jersey? 13:21:06
A. Don't know. 13:21:11
Q. Genetics and I.V.F. in 13:21:12
Virginia? 13:21:12
A. Don't know. 13:21:12
Q. Cornell Medical Center in New 13:21:14
York City? 13:21:16
A. Don't know. 13:21:16
Q. Genesis Genetics? 13:21:17
A. Don't know. Oh, no. Genesis 13:21:18
wasn't. He said he wasn't. 13:21:22
Q. Shady Grove? 13:21:22
A. No. 13:21:24
Q. No, you don't know; or no, they 13:21:24
weren't? 13:21:24
A. No, I don't know. 13:21:27
Q. Baylor? 13:21:28
A. Don't know. 13:21:29
Q. And the lab in Florida we 13:21:32
talked about? 13:21:40
A. Don't know. 13:21:41
Q. Do you agree with Drs. Kangpu 13:21:42
Xu and Mark Hughes that under the circumstances 13:21:50

C. STROM, M.D., PhD.

existing at the time in this case it was proper 13:21:52
to recommend embryos seven and eight for 13:21:54
transfer? 13:21:58
A. No. 13:21:58
Q. What should have been done, 13:22:01
given -- you've seen the analysis of the embryos, 13:22:07
correct? 13:22:11
A. Yes. 13:22:11
Q. All right. What recommendations, 13:22:13
if any, should Dr. Hughes have made at that 13:22:15
time? 13:22:19
A. He should have had the 13:22:19
conversation either with the physician or 13:22:20
with the Grossbaums saying that given the 13:22:22
details of this case, that these diagnoses could 13:22:24
not be considered reliable in that the Grossbaums 13:22:28
should make the decision based on that data. 13:22:34
Q. So you do not believe that any 13:22:49
different embryos should have been transferred? 13:23:02
A. No. 13:23:05
Q. Do you believe the procedure 13:23:06
should have been cancelled or postponed 13:23:10
or is it just your testimony that was up to the 13:23:12
Grossbaums? 13:23:15

C. STROM, M.D., PhD.

A. Correct. 13:23:16
Q. Do you have an opinion as to 13:23:17
what they would have agreed or not agreed 13:23:22
to do? 13:23:25
A. No opinion. 13:23:27
Q. Do you agree that the two 13:23:28
embryos Dr. Hughes said were okay for 13:23:42
transfer were eight and ten? 13:23:45
A. That's what I was told. 13:23:47
Q. Well, you have it in front of 13:23:48
you. 13:23:50
A. I was told that those were the 13:23:53
ones that were transferred. 13:23:55
MR. STEIN: Look at the report. 13:23:57
THE WITNESS: I'm sorry. You 13:23:59
took something from me. Oh, here. 13:24:05
(The Witness perused the 13:24:11
exhibit.) 13:24:12
A. Well, in this particular report, 13:24:12
embryos four, seven, eight, thirteen and 13:24:24
fifteen would be considered eligible for 13:24:31
transfer. 13:24:35
Q. On the right-hand column, do 13:24:36
you agree that the two that Dr. Hughes or 13:24:40

C. STROM, M.D., PhD.

his lab said okay for transfer were seven 13:24:44
and eight? 13:24:47
MR. HAMAD: Objection to form, 13:24:48
asked and answered. 13:24:49
A. That's actually incorrect. The 13:24:50
two that he's got are ten -- 13:24:52
Q. I'm sorry, I meant eight and 13:24:54
ten. I apologize. Seven and eight were 13:24:56
transferred and do we agree that the two 13:24:59
he said were okay for transfer were eight 13:25:01
and ten? 13:25:04
MR. HAMAD: Objection to form. 13:25:05
Asked and answered. He already said 13:25:07
which ones were eligible for transfer; but 13:25:07
beyond that, you can answer it again. 13:25:08
A. I think what's interesting to 13:25:10
me is that he's got several that say carrier at 13:25:14
worst. 13:25:18
Q. No, I didn't ask what interests 13:25:19
you. I asked you do you agree that the two 13:25:21
embryos that are said in that report to be okay 13:25:24
for transfer are eight and ten? 13:25:29
A. Yes. 13:25:32
Q. All right. Do you agree that 13:25:33

other than control samples CG and MG, the only cells that were biopsied that had no deletion on the paternal side were samples two, which had a mutant maternal allele and therefore possible paternal A.D.O., eight and ten? 13:25:36 13:25:40 13:25:44 13:25:47 13:25:51 13:25:57

MR. HAMAD: I have an objection to this line of question, in that you stopped him from answering the question, the prior question, and also in the fact that I think you're asking the question -- 13:25:58 13:26:01 13:26:04 13:26:06 13:26:08

MR. LEUCHTMAN: No, I didn't stop him from answering the question. 13:26:09 13:26:10

MR. HAMAD: He wasn't finished. 13:26:11

MR. LEUCHTMAN: I encouraged him to answer the question and not to ramble on. 13:26:13 13:26:14

MR. STEIN: I object to the characterization of the Doctor rambling on. He's responding to your questions. 13:26:19 13:26:23 13:26:25

MR. LEUCHTMAN: Once encouraged, yes, I agree, and I'd like an answer to this one. 13:26:26 13:26:28 13:26:29

A. Okay. Column two, no deletion, sample number two; no deletion, sample 13:26:29 13:26:33

number eight; no deletion sample number ten. 13:26:35 13:26:38

Q. What does no deletion mean? 13:26:38

A. It means, the Delta F 508 mutation was not observed in those samples. 13:26:40 13:26:46

Q. What does no amp mean? 13:26:50

A. No amp means no amplification. Means no analysis. 13:26:53 13:26:57

Q. Doctor, I'm going to ask you questions about two embryos, eight and ten and I want to make it clear it that I'm not asking whether one was more likely than the other, but whether you can say without engaging in guess, speculation, or conjecture that either one in and of itself was more likely than not the involved embryo. Do you follow me? 13:26:58 13:27:00 13:27:02 13:27:06 13:27:08 13:27:10 13:27:12 13:27:14 13:27:18

A. No. That's a stupid question. There are higher risks to one of these embryos than the other embryo, but that doesn't mean it's more likely than not to have been the one that caused the pregnancy. 13:27:19 13:27:22 13:27:25 13:27:28 13:27:32 13:27:34

Q. That's what I'm trying to ask 13:27:34

you now. 13:27:36

A. There's no way to know which of those embryos resulted in the pregnancy. 13:27:36 13:27:39

Q. There's no way to know. 13:27:41

A. No. 13:27:44

Q. All right. Do you have an opinion as to the percentage chances of -- strike that. 13:27:49 13:28:44 13:28:48

Now, this is an issue we touched on earlier. Was it reasonable for Dr. Hughes to set as a condition to Genesis doing P.G.D. the undergoing by a couple of C.V.S. or amniocentesis? 13:28:51 13:28:58 13:29:01 13:29:05 13:29:08

A. A requirement? I don't think that's reasonable. 13:29:14 13:29:16

Q. As a precondition of his getting involved. 13:29:17 13:29:18

A. Well, that's up to him. It's his decision. 13:29:19 13:29:22

Q. Do you agree or disagree that it's important scientifically for a lab doing single cell P.G.D. to learn that there's been a failure or a misdiagnosis ten to fifteen weeks into a pregnancy as opposed 13:29:23 13:29:25 13:29:29 13:29:34 13:29:37

to after the baby has been born? 13:29:41

A. No. 13:29:43

Q. Do you agree that as of early to mid 2004, Genesis consisted of scientists trying to develop a complicated single cell test? 13:29:44 13:29:49 13:29:52

MR. STEIN: I object to the form of the question. How is he supposed to know what was going on at Genesis Genetics? 13:29:58 13:29:59 13:30:02 13:30:04

MR. LEUCHTMAN: I guess especially now that he's coached, he can say I don't know. 13:30:04 13:30:07 13:30:10

MR. STEIN: You know, when you ask a question that is loaded with presumptions and assumptions that on its face is beyond the canon of anything who's not intimately involved in the operation of Genesis Genetics, the question speaks for itself as being inappropriate and if you couch it in those terms, you get an objection from me. 13:30:10 13:30:11 13:30:14 13:30:16 13:30:22 13:30:26 13:30:27 13:30:30 13:30:33 13:30:37

MR. LEUCHTMAN: Noted. 13:30:37

MR. STEIN: Thank you. 13:30:38

EXHIBIT J

Volume I
Pages 1 to 124
Exhibits 1 - 4

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

CHAYA GROSSBAUM and MENACHEM GROSSBAUM, her spouse, individually and as guardians ad litem of the infant ROSIE GROSSBAUM,
Plaintiffs,

vs.

GENESIS GENETICS INSTITUTE, LLC, of the State of Michigan; MARK R. HUGHES, M.D.; NEW YORK UNIVERSITY SCHOOL OF MEDICINE and NEW YORK UNIVERSITY HOSPITALS CENTER, both corporations in the State of New York; ABC CORPS. 1-10; JOHN DOES 1-10,
Defendants.

Civil Action No. 07-CV-1359 (GEB)

DEPOSITION OF SAMUEL C. PANG, M.D., a witness called on behalf of the Plaintiffs, taken pursuant to the Federal Rules of Civil Procedure, before Carol H. Kusinitz, Registered Professional Reporter and Notary Public in and for the Commonwealth of Massachusetts, at the Offices of Reproductive Science Center, One Forbes Road, Lexington, Massachusetts, Massachusetts, on Tuesday, November 23, 2010, commencing at 3:35 p.m.

PRESENT:

Nusbaum, Stein, Goldstein, Bronstein & Kron, P.A. (by Lewis Stein, Esq.)
20 Commerce Boulevard, Suite E, Succasunna, NJ 07876, for the Plaintiffs.

(Continued on Page 2)

PRESENT (Continued):

Stephen N. Leuchtman, P.C.
(by Stephen N. Leuchtman, Esq.)
1380 E. Jefferson Avenue, Detroit, MI 48207, for the Defendants Genesis Genetics Institute, LLC, and Mark R. Hughes, M.D.

Marshall, Dennehey, Warner, Coleman & Goggin, P.C. (by Jay A. Hamad, Esq.)
425 Eagle Rock Avenue, Suite 302, Roseland, NJ 07068, for the Defendants New York University School of Medicine and New York University Hospitals Center.

* * * *

I N D E X

* * * *

E X H I B I T S

* * * *

PROCEEDINGS

SAMUEL C. PANG, M.D.
a witness called for examination by counsel for the Plaintiffs, having been satisfactorily identified by the production of his driver's license and being first duly sworn by the Notary Public, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. STEIN:

Q. Dr. Pang, as you know, my name is Lewis Stein. I represent the Plaintiffs Chaya and Menachem Grossbaum in this lawsuit against NYU as well as Genesis Genetics and Dr. Hughes. You have been offered as an expert on behalf of NYU, and we're here to take your deposition.

"Deposition" is merely a three-syllable word that means a question-and-answer session in which you have been placed under oath here today, and my questions and your answers are going to be recorded by the lady who sits to my left and your right. And if the matter goes to trial, what you say here, to the extent that it may be inconsistent with anything that you testify at trial, we can use the deposition here today, that you give today.

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Q. Doctor, isn't it your testimony that you need the mother's contribution to the cell, you need to know the nature of that contribution before you can determine the suitability of that particular embryo for implantation? Is that correct?
A. No.
Q. What are you saying?
A. You need information from both the paternal and maternal components to judge whether or not that embryo may be suitable for transfer.
Q. Okay. And why do you need information from both?
MR. HAMAD: Objection to form. You can answer.
A. Because this is an autosomal recessive disease, and in order for a pregnancy to be affected with the disease, you need to have the CF mutation from both the maternal and the paternal gametes to result in a baby that is affected with CF.
Q. Or to determine whether a baby will not be affected with CF; isn't that right?
A. Not completely, no.
Q. Well, tell me why it's not complete.
A. Because...

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MR. HAMAD: Belated objection.
A. If you know that one component is normal for sure, but you don't have information from the other component, that embryo would then potentially be a carrier in the worst case, just like the parents.
Q. And would a child or a baby born of that embryo not be an affected child, but merely a carrier at worst?
MR. HAMAD: Objection to form. You're being unfair, because now you're comparing -- you're using the Doctor's testimony about analysis --
MR. STEIN: Okay. You have an objection.
MR. HAMAD: All right. Objection.
A. Please restate your question.
Q. Sure. You indicate that if you have information that the contribution of one parent is normal, and you don't know what the contribution of the second parent is, that that child would be a carrier at worst; is that correct?
A. That is correct. The child could also be completely normal, with two normal genes.
Q. But it would not be an affected child; is that correct?

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A. It can only be affected if it has two CF mutation genes, one from each parent.
Q. So then once you have -- by the way, when you have a CF 10 exon known to have no deletion, then that would be a normal gene; isn't that correct?
A. No, it is not correct.
Q. Why not?
A. Because you need information from the maternal component before you can make that conclusion.
Q. In other words -- I thought you said recently that because it was a recessive gene -- withdraw that -- because cystic fibrosis is a recessive genetic disorder, that you need to have an affected contribution from both parents in order to get an affected baby; is that correct?
A. Yes.
Q. So does Sample No. 2 show that the contribution of the father is normal?
A. It says that the deletion was not detected, no deletion detected.
Q. Well, does "no deletion detected" mean that the gene mutation is absent from that cell -- from

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the father's contribution?
MR. HAMAD: Objection to form.
A. Not necessarily.
Q. Not necessarily? Well, since the only -- under "CF 10," which is the father's contribution, there is, if you look down the column from the sample studied, there is only two entries, either "No amp," meaning they don't have any kind of a reading of the nature of the genetic contribution of the father, or they have "No deletion"?
A. Correct.
Q. * So that means that, according to what you just testified, none of the father's contribution would be normal; is that right?
MR. HAMAD: Objection to form. You ask him if there is a G or a T.
MR. STEIN: I didn't ask him anything about that.
MR. HAMAD: Can you read counsel's prior question when he asked him if "No deletion" would mean --
MR. STEIN: Well, let's see if the Doctor needs to have the question reread.
Q. Do you understand the questioning, Doctor?

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A. No. There was -- there's been too many questions.
Q. Too many questions?
A. And I'm now confused by what your final question was. So....
Q. You want it read back?
A. Yes, please.
(* Question read)
A. No, that's not necessarily the case.
Q. ** Which samples of the list, those listed in the left column, 2, 3, 4, 7, 8, 9, 10, 13, 14 and 15, which of those samples are normal from the father's contribution to the cell?
MR. HAMAD: Objection to form. You can answer if you understand it.
MR. LEUCHTMAN: Same objection.
MR. HAMAD: It doesn't make sense medically, but you can answer it.
MR. STEIN: Is that your declaration?
MR. HAMAD: That's my declaration.
MR. LEUCHTMAN: Which are normal from the father, judging only from the father's contribution? Lew, I'm trying to figure out what you're asking. Then he can answer the question.

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MR. STEIN: You guys go figure it out, and then --
Q. Doctor, do you understand what I just asked you?
MR. HAMAD: I just object to this whole line of questioning of parsing these things out in a way that does not medically make sense to the Doctor. He's telling you he's confused by your question. Ask him to analyze one of these things, the whole embryo analysis. Ask him to do something that makes medical sense.
MR. STEIN: Okay.
MR. HAMAD: Go ahead.
What's the question?
MR. LEUCHTMAN: Yes.
Q. Do you now understand the question, Doctor?
MR. HAMAD: We've had too much colloquy. I would rather have him hear it again.
MR. STEIN: Well, you don't have to rather have him hear it again.
Q. I asked the Doctor, do you understand the question?
THE WITNESS: Could you please read the question again.

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MR. STEIN: For the third time, please read the question.
(** Question read)
MR. HAMAD: Objection to form. Only? You can answer if you understand. Go ahead.
A. In order to determine whether or not an embryo is normal or at least the cell is normal, you need information from both the paternal and the maternal. You cannot make a decision about the normality of the embryo based only on information from one set of parents without taking into consideration information from the other parent.
Q. And when you say an embryo is not normal, does that mean that you're calling the embryo free of any mutation material from either parent, or are you considering it to include where one of the two parents contribute their mutation, that cell would be considered suitable for transfer?
MR. LEUCHTMAN: Objection.
MR. HAMAD: Objection. I don't understand the question. If you understand it, you can answer.
A. I completely do not understand that question.
MR. HAMAD: Are you asking about

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information or conclusion from both? That's what I'm trying to figure out. It doesn't make sense to either one of us who are sitting here.
A. I'm sorry, it was rambling. No offense, but I just didn't get what you were trying to ask.
Q. Let's go back to CF 10.
* "No deletion" under -- that's the father's exon. That's the location on --
A. The paternal contribution.
Q. The paternal contribution. Does that indicate the presence of a CF gene mutation?
MR. HAMAD: Objection to form. You can answer if you understand.
A. Are we talking about Sample 2 again?
Q. Yes. **
MR. HAMAD: I'm going to object to this line of questioning.
A. The report says, "No deletion" --
MR. HAMAD: On second. This is unfair to the Doctor. Are you asking about the entire --
MR. STEIN: Will you stop interrupting, or I'm going to walk out of this deposition right now and ask the Court to enter an order declaring that you should not interfere with the questioning.

Same answer?
A. Same answer.
Q. And did you see any evidence in the record provided by NYU as to what kind of counseling the Grossbaums got, after the report came back from Genesis Genetics, before implantation?
MR. HAMAD: Objection to form.
A. I cannot remember specifically. I read those -- I read the reports over a year ago -- about a year ago, I would say.
Q. So you don't know --
A. I would have to go through and look to see whether or not that was done. But I can't remember -- I don't remember specifically, shall we say.
Q. * And if no counseling was done by the physician in charge of implantation who received the genetic report from the laboratory, would that be a departure from standard of care?
MR. HAMAD: Objection to form. At what point in time are we talking about here?
Q. Answer the question, Doctor.
MR. HAMAD: If you understand the question -- can you repeat the question. My

objection, please. And, Doctor, if can you understand it, you can answer it.
MR. STEIN: I can guarantee that this transcript is going to Salas, guarantee.
(* Question read)
A. Well, I wasn't there, so I can't tell you whether or not counseling was done. But I would say that in my opinion, the time for counseling is not in the embryo transfer room when the woman has her legs up in stirrups. The time for counseling is at the very beginning, before they begin this process, so that they have a full understanding of that risk before they go into the process and not at the end of the process.
Q. Do you subscribe to a standard for interpreting medical records that, if it wasn't recorded, it did not happen?
MR. HAMAD: Objection to form.
MR. LEUCHTMAN: I'll join in that objection.
MR. HAMAD: If you understand the question, you can answer.
A. Could you please restate the question.
Q. Do you subscribe to the standard for

interpreting medical records that, if it wasn't recorded, it did not happen?
A. Well, I don't subscribe to it, but I understand that that is what --
MR. HAMAD: Objection to the form. You can answer.
A. I don't subscribe to it, because I know that a lot of things happen, and if we spent all our time documenting everything that happened, we would spend more time documenting than we would doing things. So for personal reasons, I don't subscribe to it, but I understand that that is something that is generally accepted as a standard.
MR. STEIN: I think I'm almost done.
MR. HAMAD: Take your time.
MR. LEUCHTMAN: If you don't mind, Mr. Stein, while you're looking.
MR. STEIN: Go ahead.
CROSS EXAMINATION
BY MR. LEUCHTMAN:
Q. Relatively speaking, how well developed were Embryos 7, 8 and 10, and is that a factor in anybody's approach to implantation, or should it be?
A. Looking at Embryos 7, 8 and 10, Embryo 7

was an early blastocyst, Embryo 8 was a full blastocyst, and Embryo 10 was an early morula, which is the least developed of them. So in looking at this, the most advanced embryo that was transferred was Embryo No. 8, which was the full blastocyst, and in all -- and then, of course, there is Embryo 7, which is an early blastocyst.
Does that answer your question?
Q. Yes, sir. Thank you.
MR. LEUCHTMAN: I'm not necessarily done with the questions.
MR. HAMAD: Are you done?
MR. STEIN: Are you finished?
MR. LEUCHTMAN: I said I'm not necessarily done with my questions. I just did that while you were looking through your notes.
MR. HAMAD: Unless you want to follow up on that.
MR. STEIN: Why don't you finish -- I just have one question.
MR. LEUCHTMAN: Go ahead and ask it.
DIRECT EXAMINATION, Continued
BY MR. STEIN:
Q. In your review of these records, did you

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information was provided by Menachem Grossbaum, does that enhance the risk in this case of pregnancy with a nonimplanted embryo?

A. That certainly increases the likelihood that that could have been a reason for the nonimplanted embryo.

Q. Now, you have stated, and I won't go back over it, that 10 and 8 had different risks of leading to an affected baby. My question to you is not if one of those -- one of the embryos was more likely than the other to have been affected, but whether you can say, without engaging in speculation or guess or conjecture, that any particular one of the two embryos is the one that led to the birth of Rosie Grossbaum.

A. I believe you meant Embryo 7 and 8?

Q. Yes. Did I say --

A. You said 8 and 10.

Q. I'm sorry. Let me restate the question, because I for some reason seem to do that, get these numbers confused.

8 and 10 were implanted, correct?

MR. HAMAD: No, 7 and 8.

Q. I'm sorry, 7 and 8. It's late.

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7 and 8 were implanted?

A. Correct.

Q. Is it fair to say that, without engaging in guesswork, since the odds were way less than 50 percent as to either one of them, that it would be speculation to say which of those two embryos, if either of them, led to the birth of Rosie Grossbaum?

A. Well, given that Embryo 8 is a much more advanced embryo, it was a full blastocyst, I would say that the medical probability that Embryo 8 would have implanted over Embryo 7 is higher.

Q. But you can't say without guessing that it was 8 as opposed to 7, correct?

MR. HAMAD: Objection to form. Asked and answered.

Q. Well, you said the risk was higher, but you can't say that it's more likely than not that either one of those embryos --

MR. HAMAD: Objection to form. You can answer again.

A. Well, if indeed one of those two embryos implanted, I would say that the probability that the embryo which implanted was Embryo 8 is higher than the probability that Embryo 7 implanted, just based on the fact that the Embryo 8 was a full expanded -- actually a full blastocyst as opposed to Embryo 7, which was an early blastocyst.

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Q. Well, we don't know with any degree of certainty which embryo ended up being this child, correct?

MR. HAMAD: Objection to form. Asked and answered. Certainty or probability?

Q. I'm not talking about one versus the other. But in looking at any one embryo, we can't say that it was more likely than not, can we, that that embryo led to the birth of Rosie Grossbaum?

MR. HAMAD: I'm going to object. Asked and answered. You can answer it again.

A. If we assume that one of the two embryos that was transferred resulted in the birth of Rosie, the medical probability is that Embryo 8 was the one that implanted, based on the fact that it was a more advanced embryo, it was a full blastocyst, as opposed to Embryo 7, which was an early blastocyst.

Q. Okay. So what you're saying is that one of those embryos is more probable than the other, but we don't know whether either of those or an embryo from a -- a nonimplanted embryo led to the birth of this child?

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MR. HAMAD: Objection to the form. Asked and answered. You can answer it again.

A. We don't know which embryo implanted.

Q. All right. Thank you. Led to the child's birth?

MR. HAMAD: Objection to the form.

MR. LEUCHTMAN: Let him answer it.

MR. HAMAD: Okay, but asked and answered three times.

A. We don't know which embryo which was transferred resulted in the birth of Rosie. But as I've stated before, based on the embryo development, the medical probability is that Embryo 8 would be more likely to implant than Embryo 7.

Q. One is more likely than the other, but we don't know which did, right?

MR. HAMAD: Objection. Asked and answered. He told you the medical probability was --

MR. LEUCHTMAN: Would you quit coaching the witness, please.

MR. HAMAD: I'm not coaching the witness. You asked the same question. Did he not ask the same question five times now? You're sitting here.

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MR. STEIN: I don't sit here as a judge.
MR. HAMAD: Okay. Well --
MR. STEIN: This is just a continuation of the same fighting that's been going on for the last three hours. So go fight with him.
MR. HAMAD: Ask him the same question again. Put it a sixth time.
A. I have answered the question. I don't know how else you want me to answer the question.
MR. LEUCHTMAN: All right. Thank you.
MR. STEIN: Are you done?
MR. HAMAD: Do you have any questions?
MR. STEIN: I have more. I want to know --
MR. LEUCHTMAN: Yes. You asked the question am I done, and my answer is --
MR. STEIN: You are done?
MR. LEUCHTMAN: Unless I have redirect --
MR. STEIN: Based on what I ask. Okay.
MR. HAMAD: Actually, let's take a minute break. Let's step outside for one second.
(Brief recess)
MR. STEIN: I just have a few more questions.

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REDIRECT EXAMINATION
BY MR. STEIN:
Q. Doctor, do the embryos continue to develop during the period that the single cells are being studied at the laboratory?
A. Some of them do, yes.
Q. And can you tell -- is there any scientific or medical information that would tell you which ones continue to develop and which ones don't?
A. Based on the embryo morphology we can determine whether or not the embryo has continued to grow. Typically two days later, they get to the blastocyst stage. If they do not, we consider them to be arrested in development, either in the cleavage stage or the morula stage.
Q. So then if the embryos do reach the blastocyst stage, then don't the embryos have the same chance of implantation?
MR. HAMAD: Objection to form. You can answer, if you understand the question.
MR. LEUCHTMAN: Of implantation?
MR. HAMAD: Development?
MR. STEIN: Development, yes. It's the same chance of giving birth to the baby.

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MR. LEUCHTMAN: Why don't you start the question from scratch.
A. Are you asking the same question that he asked?
Q. No, I'm only refining it by asking whether or not, if the baby reaches the blastocyst stage -- if the embryo reaches the blastocyst stage, whether or not, by reaching that stage, they both arrive at the same status to predict their ability to result in a successful pregnancy.
MR. HAMAD: This was asked and answered six times.
Q. And the answer -- is your answer no?
MR. HAMAD: You can answer it again.
A. Okay. Well, my answer is going to be the same restated a different way. Either one of those blastocysts could have implanted --
Q. All right.
MR. HAMAD: I don't think the Doctor is done. You cut him off.
A. But based on the stage of development, given that Embryo 8 was a full blastocyst and Embryo 7 was an early blastocyst -- it had been a morula at ten o'clock that morning -- the medical probability

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is that Embryo 8 was more likely to implant than Embryo 7.
Q. And that's based on what medical theory or science or whatever?
A. Based on the developmental stage of the blastocyst. There are blastocysts and there are blastocysts and there are blastocysts. And there are early blastocysts and there are full blastocysts and there are expanded blastocysts.
Q. Is there any statistical reporting -- is this your opinion, or is this something that is discussed in the literature?
MR. HAMAD: Objection to the form.
A. It is something that has been studied, yes, when people do single embryo transfers and look at the statistical odds of implantation of blastocysts based on the various stages of the embryo development.
Q. You said that one of the probable causes -- or possible causes of this missed diagnosis was mosaicism; is that correct?
A. That is one of the possible explanations, yes.
Q. Now, can you tell me why you say that

EXHIBIT K

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September 29, 2009

Mr. Lewis Stein
Nusbaum, Stein, Goldstein, Bronstein & Kron
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RE: Grossbaum vs Genesis Genetics et al

Dear Mr. Stein,

You have asked me to provide an opinion in the above referenced case. I have reviewed records that were provided by Genesis Genetics and New York University School of Medicine, as well as depositions of Dr. Mark Hughes, Dr. Licciardi and Alexis Adler, and publications regarding multiplex marker analysis provided by Dr. Rechitsky. As I understand, the Grossbaums underwent preimplantation genetic diagnosis in which egg retrieval, *in vitro* fertilization, and embryo biopsy performed at NYU IVF Clinic. Genetic diagnosis for cystic fibrosis was performed by Genesis Genetics on samples provided by NYU. The child that was born to the Grossbaums as a result of this procedure was found to be affected with cystic fibrosis.

I have formed the opinion that there are two areas where Genesis Genetics and the NYU IVF Clinic failed to offer a reasonable level of care. The first is in the counseling of the Grossbaums regarding alternatives for embryo transfer after it was discovered that the embryos recommended for transfer by Genesis Genetics were not suitable for transfer. Allele dropout (aka ADO) is a well established source of error in preimplantation genetic diagnosis. From the deposition of Dr. Licciardi, it was apparent that he was not aware of this potential cause for error. Dr. Licciardi indicated during his deposition that he did not understand the results of the genetic testing results transmitted by Genesis Genetics. There is also no documentation of what was said during the counseling session between Dr. Licciardi and the Grossbaums regarding the risks of potential sources of error. Thus, Dr. Licciardi failed to adequately appraise the Grossbaums of the potential risks of using alternative embryos for transfer.

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The second area of concern relates to the diagnostics performed by Genesis Genetics. The use of additional markers encompassing a gene such as CFTR has been shown to reduce errors due to allele dropout. Numerous manuscripts had been published and abstracts presented at national and international meetings before the date of the Grossbaums' procedure indicating the value of including genetic markers to minimize errors due to ADO. Genesis Genetics is a high profile provider of PGD services and has by their report, performed many cases of PGD for cystic fibrosis. Thus, it is reasonable to expect that Genesis Genetics would have offered multiplex DNA markers to minimize the risk of error due to ADO in the Grossbaum case. If the laboratory was unable to offer this service, then the Grossbaums should have been informed so that they would have the option to select other services that offered PGD using multiplex markers.

Please contact me should you have any further questions regarding this case.

Sincerely,

Garry R. Cutting, MD
Professor, Pediatrics and Medicine
Director, Post-Doctoral Training Program
Director, DNA Diagnostic Laboratory